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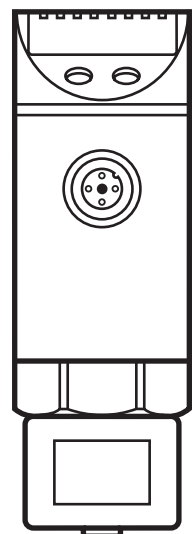
Operating instructions
Programming and display unit

efector500[®]

PP2001

UK

704795 / 00 05 / 2010



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1 Preliminary note

1.1 Explanation of symbols

- ▶ Instruction
- > Reaction, result
- [...] Designation of pushbuttons, buttons or indications
- Cross-reference

 Important note:
Non-compliance can result in malfunctions or interference.

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2 Safety instructions

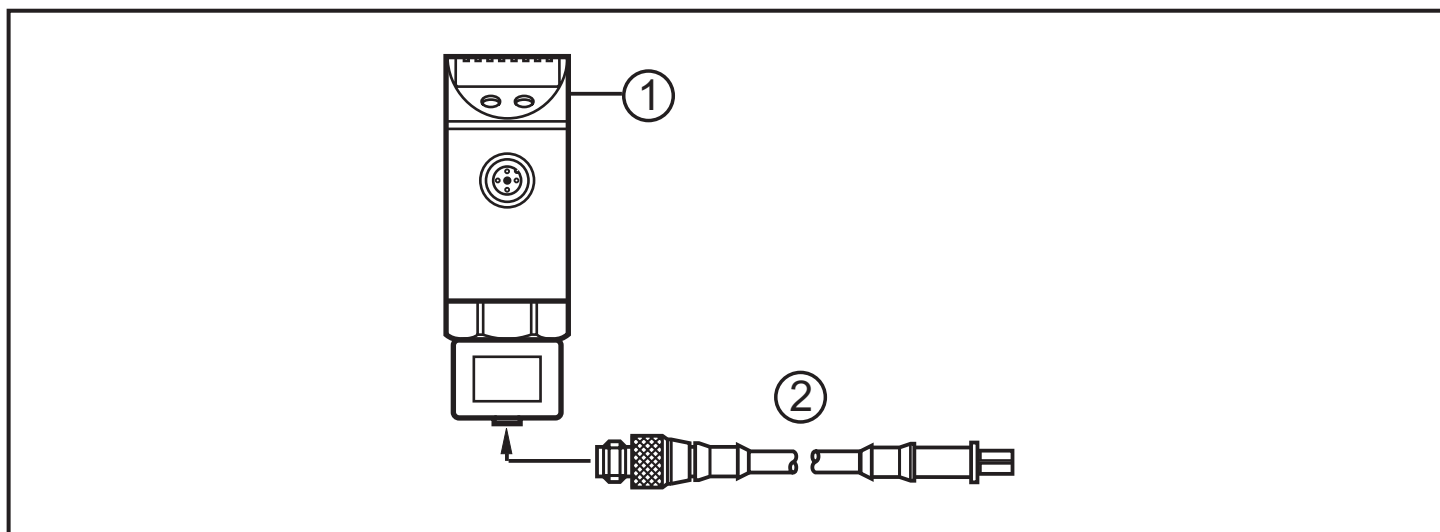
- Please read the product description prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property can occur.
- Check the compatibility of the product materials (→ Technical data) with the media to be measured in all applications.

For the scope of validity cULus:

The device shall be supplied from an isolating transformer having a secondary Listed fuse rated as noted in the following table.

Overcurrent protection		
Control-circuit wire size		Maximum protective device rating Ampere
AWG	(mm ²)	
26	(0.13)	1
24	(0.20)	2
22	(0.32)	3
20	(0.52)	5
18	(0.82)	7
16	(1.3)	10

3 Items supplied



1: PP2001

2: cable for connection of a sensor to PP2001

The following components are available as accessories (to be ordered separately):

- Connection cable with M12 connector for voltage supply and output signals of the sensor (→ catalogue or www.ifm.com).
- 24 V power supply (order no. E30080).

4 Functions and features

The unit can be used for diagnosis and parameter setting of pressure sensors. The sensor must be suitable for communication with PP2001 or PP2000. Check the indications in the operation instructions of the sensor.

- PP2001 is suitable for mobile use as well as for permanent installation (→ 6 Installation).
- Sensors can be read and parameterised before installation and set-up or during operation.



If you change parameters during operation, the operating principle of the production plant will be influenced.

► Ensure that there will be no malfunctions in your plant.

5 Function

The unit fulfils the following functions:

- It supplies the sensor with operating voltage.
- It detects type, measuring range and the current parameter set of the sensor.
- It reads and displays the current measured value of the sensor.
- It transmits the evaluation signals of the sensor.

- It permits modification of the current parameters of the sensor.
- The unit has a rewriteable read-only memory. It can store the parameter set of a sensor and transmit it to other sensors of the same type by means of simple actions (COPY and SEND).
- A stored parameter set can be changed and stored again as desired.

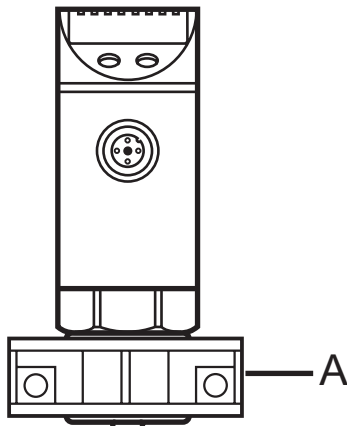
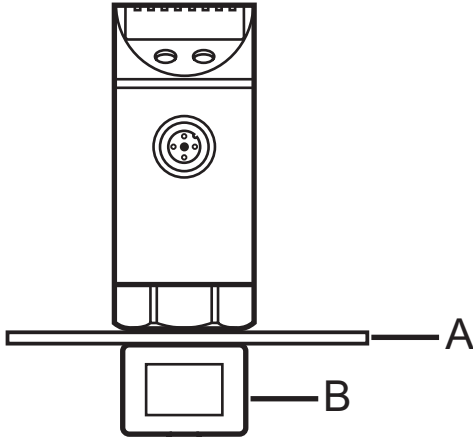
They provide the unit with the following operating options :

- Remote parameter setting of sensors (→ 10.2).
- Fast programming / series programming (→ 10.3 / 10.5).
- Changing a stored parameter set (→ 10.4).
- Remote display / remote evaluation (→ 10.6).

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6 Installation

For stationary operation two types of installation are possible:

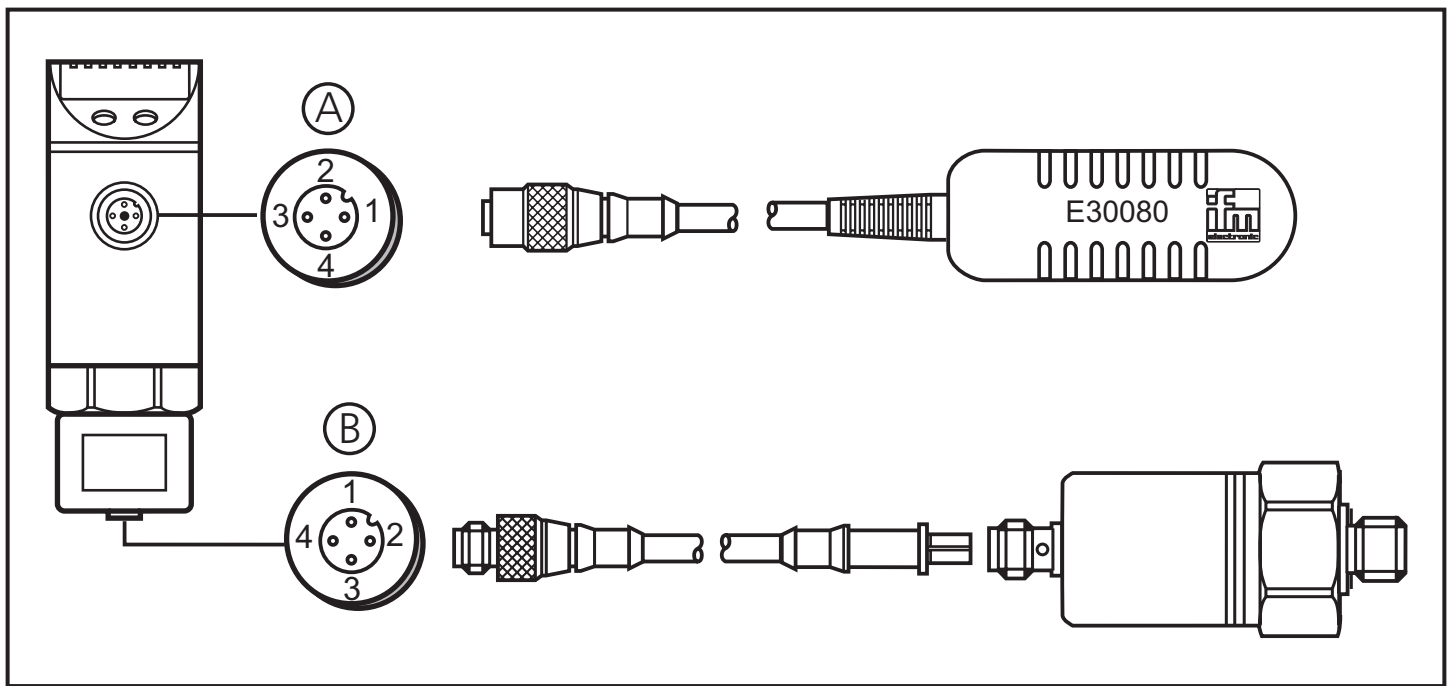
Fixing with mounting clamp	Fixing with mounting bracket
	
A: mounting clamp (to be ordered separately as accessories; order no. E10077).	A: mounting bracket Diameter of the bore hole: 18.5...20 mm. ▶ Loosen the threaded sleeve (B). ▶ Insert the unit in the bore hole. ▶ Screw the sleeve and tighten firmly.

7 Electrical connection

7.1 Offline operation

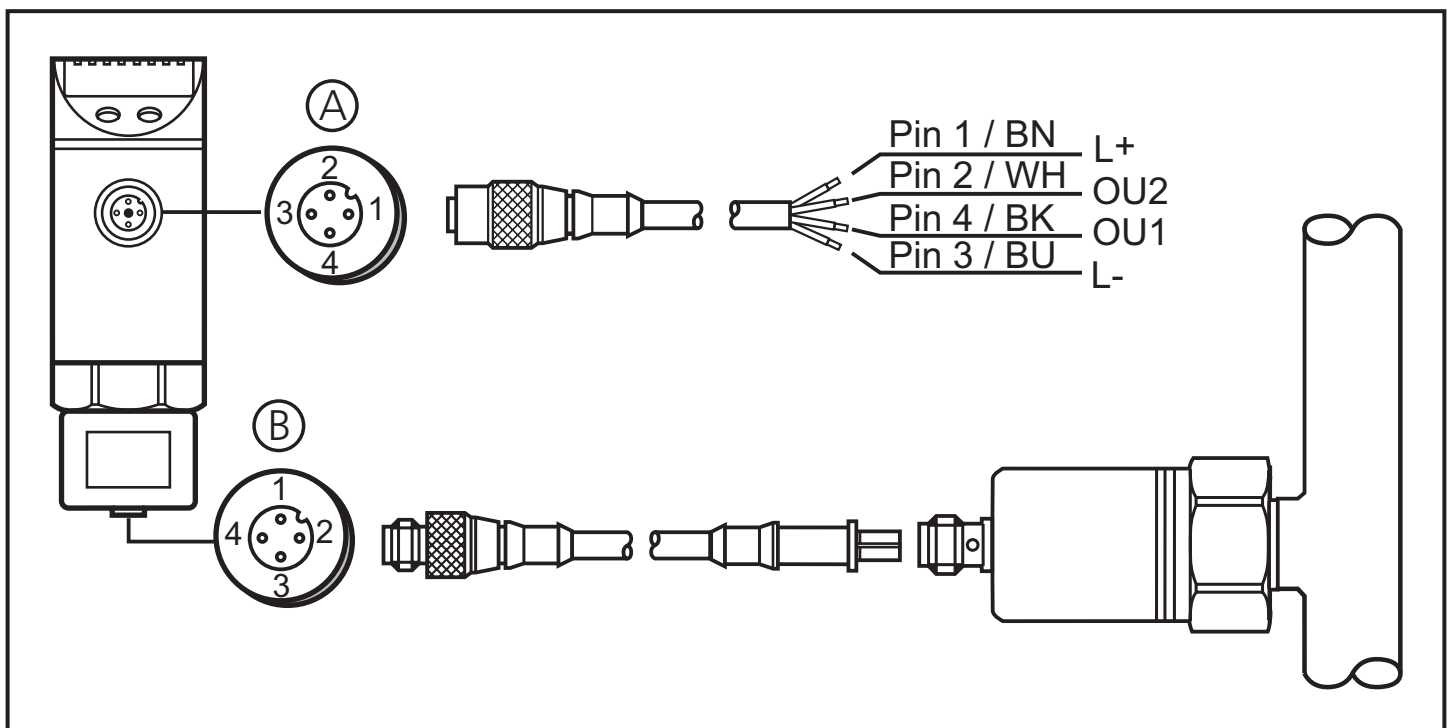
Operation outside the production plant

- ▶ Connect 24 V power supply to PP2001 (plug A).
- ▶ Connect the sensor to PP2001 (socket B) via the supplied connection cable.



7.1 Online operation

Operation with installed sensor during operation of the production plant



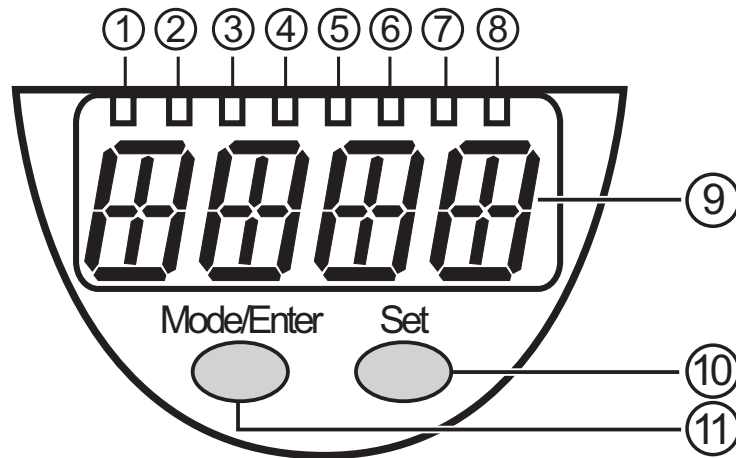
- ▶ Disconnect power.
- ▶ Disconnect the connector from the sensor and screw it to PP2001 (plug A).
- ▶ Connect the sensor to PP2001 (socket B) via the supplied connection cable.
- ▶ Switch on the supply voltage.



If you change parameters during operation, the operating principle of the production plant will be influenced.

- ▶ Ensure that there will be no malfunctions in your plant.

8 Operating and display elements



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1 to 8: indicator LEDs

- LED 2: green = indication of the system pressure in mbar.
- LED 2 + LED 1: green = indication of the system pressure in mWS.
- LED 3: green = indication of the system pressure in bar.
- LED 3 + LED 1: green = indication of the system pressure in mmWS.
- LED 4: green = indication of the system pressure in kPa.
- LED 4 + LED 1: green = indication of the system pressure in inH2O.
- LED 5: green = indication of the system pressure in MPa.
- LED 5 + LED 1: green = indication of the system pressure in mmHg.
- LED 6: green = indication of the pressure system in PSI.
- LED 6 + LED 1: green = indication of the pressure system in inHg.
- LED 7: yellow = output 2 is switched.
- LED 8: yellow = output 1 is switched.

9: Alphanumeric display, 4 digits

- System pressure is displayed.
- Parameters, parameter values and action points are displayed.

10: Set button

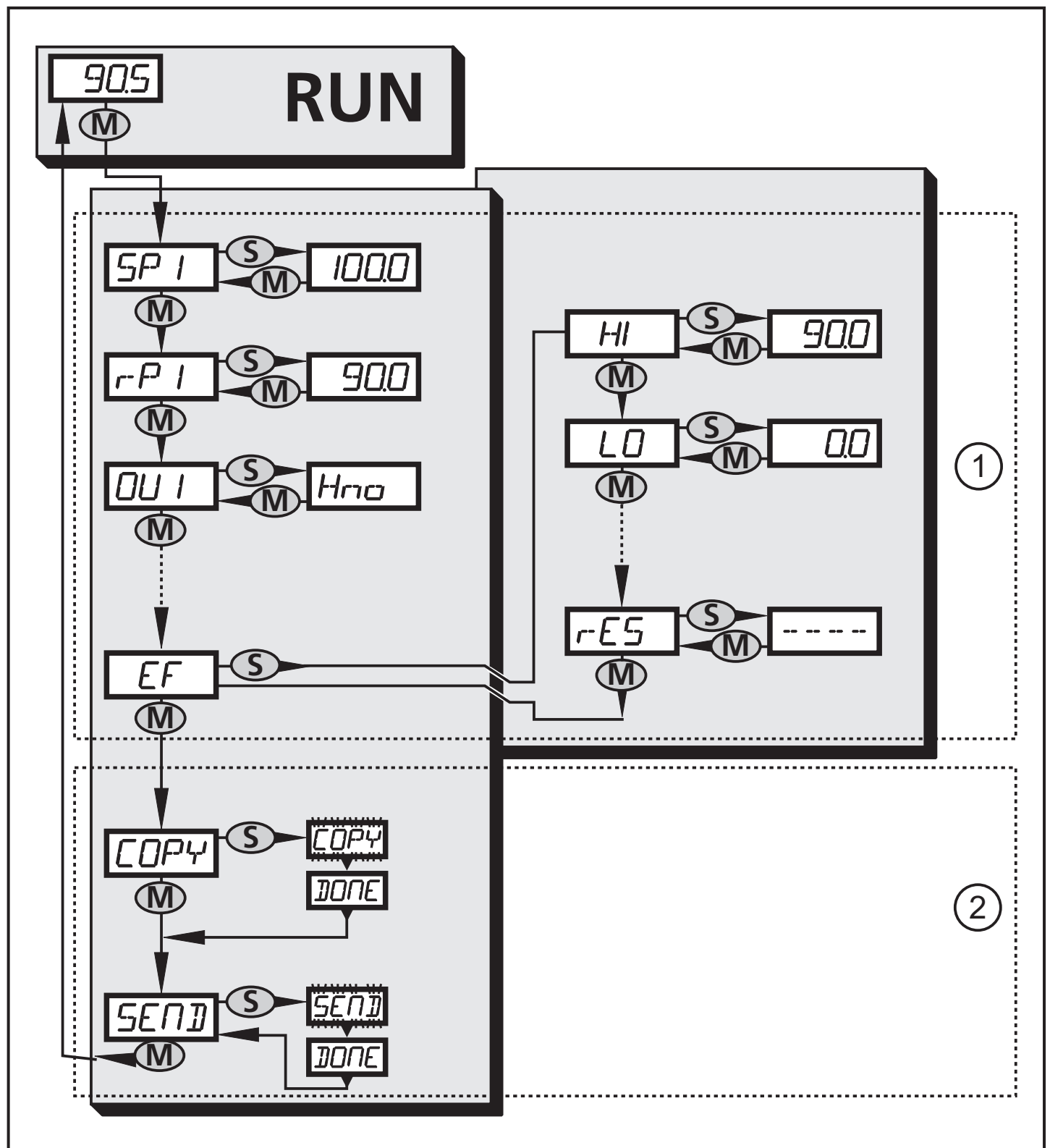
- Setting of the parameter values (continuously by keeping the button pressed; incrementally by pressing once).
- Triggering a COPY or SEND action.

11: Mode/Enter button

- Selection of the parameters and acknowledgement of the parameter values.

9 Menu

9.1 Menu structure



1: sensor-specific parameters (depending on the connected sensor)

2: action points of the PP2001

10 Operation

10.1 Connection of a sensor / initialisation

1	▶ Connect the sensor to PP2001. ▶ Apply operating voltage. > Initial display is shown.	Init ↓ READ ↓ Sensor type (running display)
2	> The current measured value is displayed. PP2001 and sensor are operational.	100

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Notes:

- If only [COPY] and [SEND] are active in the operating mode, the connected sensor does not support the parameter setting and editing functions. Only the evaluating function (Transmission of the output signals, → 10.6) and the copy functions (→ 10.3 and 10.5) are supported.
- If the sensor is disconnected, a running display indicates the type of the stored data set. Then [EDIT] is displayed.
- If another sensor is connected, the initialisation (step 1) starts again.

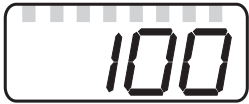
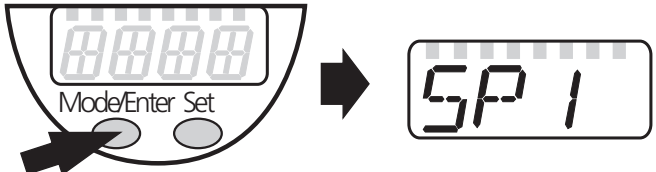
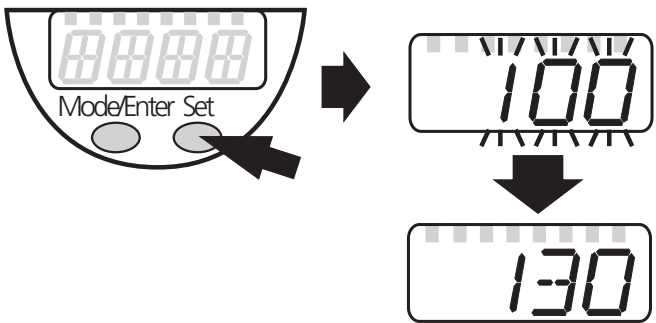
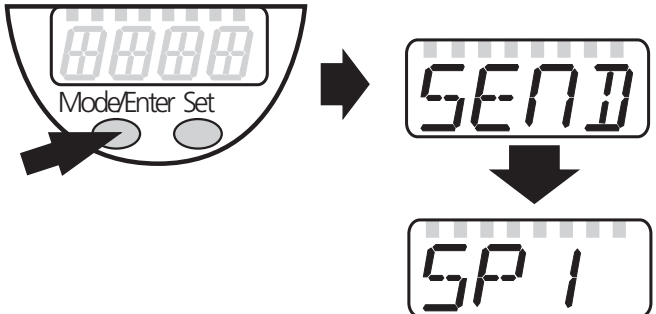
Error messages

[E.COM]	Input output error: communication error / data transfer disturbed.
[E.INI]	Communication error or data error; initialisation / support of the sensor not possible.

10.2 Setting the sensor parameters

During parameter setting the unit remains in the operating mode. It continues its monitoring function with the existing parameters until the parameter setting has been completed.

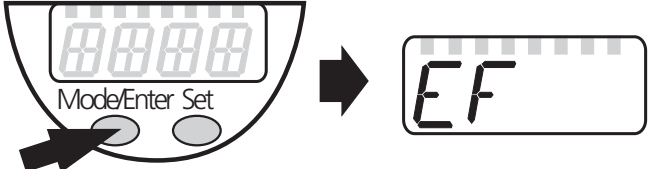
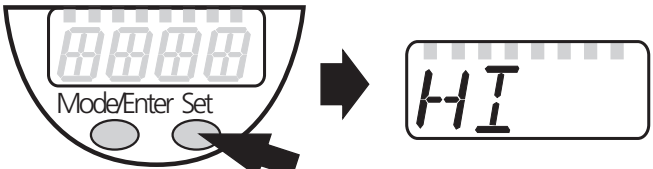
The following steps must be taken for each parameter setting:

1	▶ Connect the sensor to PP2001. > The unit passes the initialisation phase and then displays the current measured value.	
2	Selection of the parameter ▶ Press [Mode/Enter] until the requested parameter is displayed.	
3	Setting of the parameter value ▶ Press [Set] and keep it pressed. > Current setting value of the parameter flashes for 5 s. > After 5 s: setting value is changed: incrementally by pressing the button once or continuously by keeping the button pressed.	
Numerical values are incremented continuously. For reducing the value: let the display move to the maximum setting value. Then the cycle starts again at the minimum setting value.		
4	Acknowledgement of the parameter value ▶ Press [Mode/Enter] briefly. > [SEND] is briefly displayed, then the parameter designation. > The new setting value is stored in the sensor and now effective.	
Setting of other parameters: ▶ Start again with step 1.		
Finishing the parameter setting: ▶ Press [Mode/Enter] several times until the current measured value is displayed or wait for 15 s. The unit returns to the operating mode if no button is pressed for 15 s after acknowledgement of the new parameter value.		
Finishing the parameter setting and storing the changed parameter set in PP2001: ▶ Carry out the [COPY] action (→ 10.3)		



- With this parameter setting only the parameter set of the sensor is changed. The parameter set stored in PP2001 remains unchanged.
- Do not activate the action point [SEND]. This would cause the parameter set stored in PP2001 to be transferred to the sensor.
- If [SLoc] is displayed when attempting a modification of a parameter value, the sensor is locked via FDT software. This locking can only be removed via FDT software.

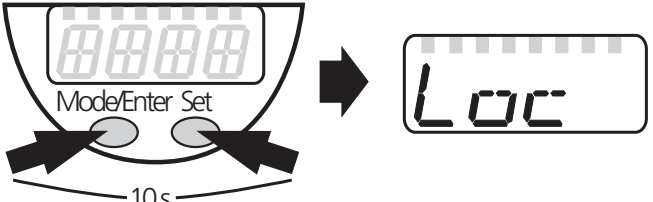
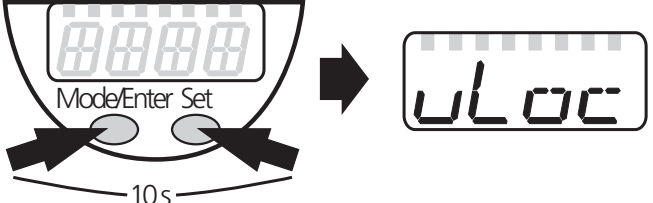
- Change from menu level 1 to menu level 2:

► Press [Mode/Enter] until [EF] is displayed.	
► Press [Set] briefly. > The first parameter of the sub-menu is displayed (here: [HI]).	

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- Locking / unlocking

The sensor can be locked electronically to prevent unintentional settings.

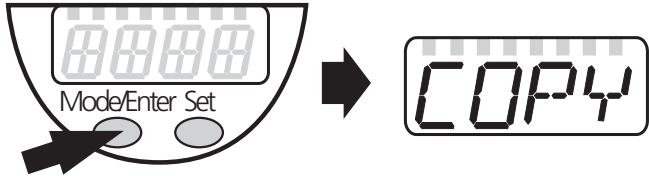
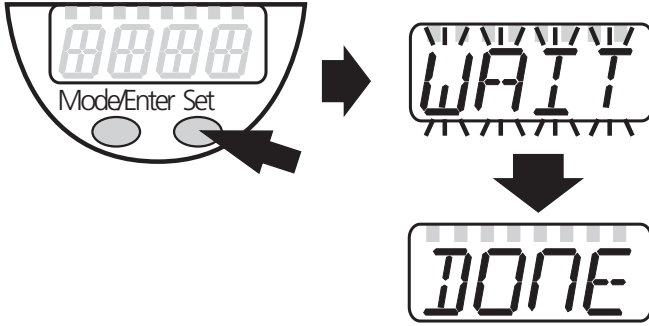
► Make sure that the unit is in the normal operating mode. ► Press [Mode/Enter] + [Set] for 10 s. > [Loc] is displayed.	
During operation: > [Loc] is briefly displayed if you try to change parameter values.	
For unlocking: ► Press [Mode/Enter] + [Set] for 10 s. > [uLoc] is displayed.	

On delivery: unlocked.

- Timeout:

If no button is pressed for 15 s during parameter setting, the unit returns to the operating mode with unchanged values.

10.3 Copying the parameter set of a sensor

1	▶ Connect the sensor to PP2001. > The unit passes the initialisation phase (→ 10.1) and then displays the current measured value.	
2	▶ Press [Mode/Enter] until [COPY] is displayed.	
3	▶ Press [Set] and keep it pressed. > [WAIT] flashes. ▶ Release [SET]. > [DONE] is briefly displayed. The copying process is finished and the parameter set of the sensor is stored in PP2001.	
4	▶ Press [Mode/Enter] briefly. > The unit goes into the operation mode (the sensor type and then the current measured value are displayed).	

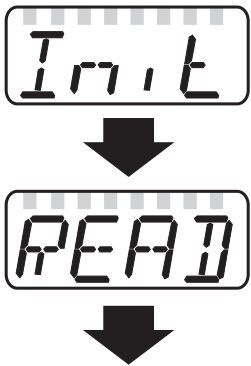
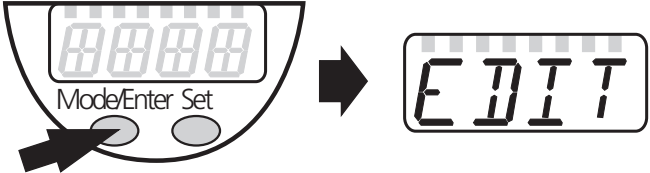
Error messages when carrying out the COPY action:

[E.COM]	Input output error: communication error / data transfer disturbed.
[E.INI]	Communication error or data error; initialisation / support of the sensor not possible.
[E.SEN]	Sensor type error: the sensor type is not supported.
[E.STO]	Error when storing the data set (e.g. B: data set too large).

The error message is displayed for 5 s. Then the menu [COPY] is again active.

In case of communication via IO-Link with a low baud rate the operation can take one minute or more.

10.4 Changing a stored parameter set

1	▶ Apply operating voltage. > Initial display is shown.	 Sensor type (running display)
2	▶ As soon as the running display appears: press [Mode/Enter] briefly. > [EDIT] is displayed.	
3	▶ Press [Set] for 5 s. > The first menu item is displayed (here [SP1]).	
4	> Carry out the parameter setting (→ 10.2).	

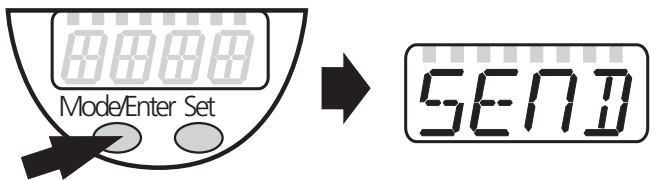
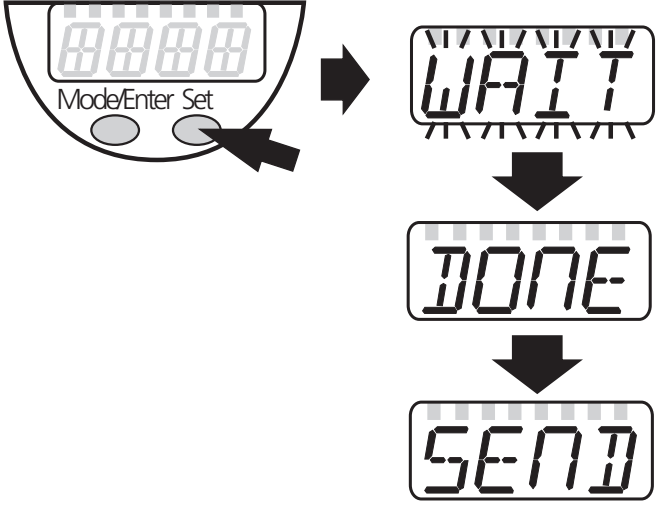


This operation can only be carried out if no sensor is connected. If for the data set stored in PP2001 only the copy functions are supported, the editing function is not active. After step 2 ([Mode/Enter] pressed briefly), [TYPE] and the sensor type are displayed (running display).

Timeout:

If no button is pressed for 15 s, the unit returns to step 2. A parameter change which has not been acknowledged is not adopted.

10.5 Transferring a parameter set to other sensors

1	► Press [Mode/Enter] until [SEND] is displayed.	
2	► Press [Set] and keep it pressed. > [WAIT] flashes. ► Release [SET]. > [DONE] is briefly displayed, then again [SEND]. The copying process is finished and the parameter set of PP2001 is stored in the sensor.	

Transferring a parameter set to other sensors

- Remove the sensor from the connection cable.
- > [- - - -] is displayed until a new sensor is connected.
- Connect the new sensor.
- > [READ] is briefly displayed, then [SEND].
- Carry out step 2.

The processes can be carried out as often as desired.

Finishing the copying process:

- Press [Mode/Enter] when [SEND] is displayed.
- > The unit goes into the operation mode (the sensor type and then the current measured value are displayed).

In case of communication via IO-Link with a low baud rate the operation can take one minute or more.

Error messages when carrying out the SEND action:

[E.COM]	Input output error: communication error / data transfer disturbed.
[E.INI]	Communication error or data error; initialisation / support of the sensor not possible.
[E.SEN]	Sensor type error: the parameter set does not correspond to the type / measuring range of the sensor.
[E.DAT]	Data error: at least one parameter of the internal data set is not within the valid range of the connected sensor.

The error message is displayed for 5 s. Then the menu [COPY] is again active.

10.6 Remote display / remote evaluation

After connection of a sensor and initialisation (→ 10.1) the current measured value is displayed. The output signals of the sensor are transmitted and provided at the output of the PP2001.

Reading of the set parameters

- ▶ Press [Mode/Enter] briefly: the parameters are displayed one after the other.
- ▶ Press [Set] briefly: the corresponding parameter value is displayed for about 15 s. After another 15 s the unit returns to the Run mode.

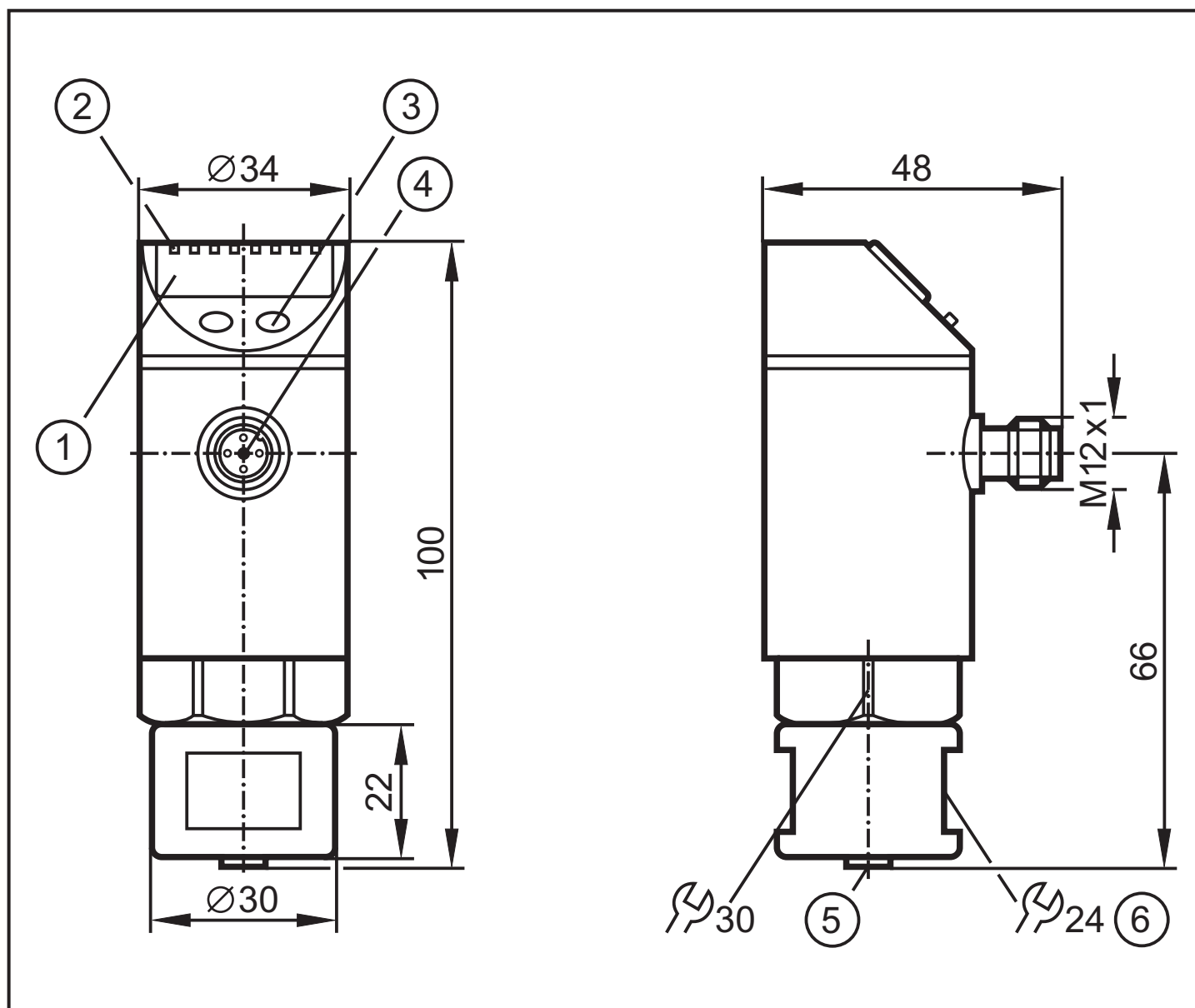
Error messages

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[SC1]	Short circuit in OUT1 of PP2001.*
[SC2]	Short circuit in OUT2 of the connected sensor (signalled via the communication interface to PP2001).*
[SC]	Short circuit in both outputs.*

*The output concerned is switched off as long as the short circuit exists.
These messages are displayed even if the display is switched off.

11 Scale drawing



Dimensions in mm

- 1: 4-digit alphanumeric display
- 2: LEDs (display unit / switching status)
- 3: programming button
- 4: connection for voltage supply and output signals
- 5: connection for sensor
- 6: nut

12 Technical data

Operating voltage [V]	18 ... 32 DC
Current rating [mA]	250
Short-circuit protection (pulsed); protected against reverse polarity and overload	
Voltage drop [V]	< 2
Current consumption [mA]	< 40
Power-on delay time [s]	1.5...10 *)
Response time for transferring the sensor output signal [ms]	OU1 < 50 / OU2 = 0
Measurement / display cycle time [ms]	200
Housing materials	stainless steel 316L / 1.4404; PC Copolymer; PBT (Pocan); FPM (Viton)
Protection	IP 67
Protection class	III
Insulation resistance [MΩ]	> 100 (500 V DC)
Shock resistance [g]	DIN IEC 68-2-27: 50 g (11 ms)
Vibration resistance [g]	DIN IEC 68-2-6: 20 g (10...2000 Hz)
Operating temperature [°C]	-25 ... 80
Storage temperature [°C]	-40 ... 100
EMC	
EN 61000-4-2 ESD:	4 kV contact discharge / 8 kV air discharge
EN 61000-4-3 HF radiated:	10 V/m
EN 61000-4-4 Burst:	2 kV
EN 61000-4-6 HF conducted:	10 V

*) depending on the connected sensor

More information at www.ifm.com

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